

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 05-101930

(43)Date of publication of application : 23.04.1993

---

(51)Int.Cl.

H01F 10/00

H01F 1/14

H01F 10/14

H01F 17/04

---

(21)Application number : 03-260294

(71)Applicant : AMORPHOUS DENSHI DEVICE  
KENKYUSHO:KK

(22)Date of filing : 08.10.1991

(72)Inventor : ONUMA SHIGEHIRO  
MATSUMOTO FUMIO  
FUJIMORI HIROYASU  
MASUMOTO TAKESHI

---

## (54) SOFT MAGNETIC THIN FILM

### (57)Abstract:

**PURPOSE:** To prepare a high saturated magnetic flux density soft magnetic thin film capable of holding a higher permeability up to a high frequency region by alternately laminating a magnetic layer chiefly including Fe and a high electric resistance magnetic layer without interposing non-magnetic layer therebetween.

**CONSTITUTION:** An alternate laminate film is prepared by alternately sputtering a composite target where a ceramics chip is disposed on a ferromagnetic target such as Fe and an Fe-based alloy target in an argon atmosphere including nitrogen. The resulting film provides a multi-layered structure composed of a composite dispersion film having a higher electric resistance and of a Fe-based alloy nitride film having a higher saturated magnetic flux density. Hereby, there is ensured a soft magnetic thin film having a higher saturated magnetic flux density which film is capable of keeping a higher permeability up to a high frequency region without being heat-treated after the film formation.

---

## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's